

## Description

# Elastomeric Suspension System Skateboard Truck

### BACKGROUND OF INVENTION

[0001] This skateboard truck is a new configuration of my previously designed skateboard truck the Pneumatic Compression Strut Skateboard Truck, patent number 6,224,076 as of May 1, 2001. This new devise is an improvement upon the formally patented skateboard truck suspension system technology, by further advancing the balance stability of the skateboard truck. Additionally, the new design consists of a suspension system which includes components that are easily interchangeable, giving the rider the ability to customize the truck response according to their weight and riding ability. This equates to advanced maneuverability with respect to superior steering stability and therefore steering ease.

### SUMMARY OF INVENTION

[0002] The invention claimed is a skateboard truck intended for

use in all categories of general skateboarding. This skateboard truck diverges from traditional skateboard trucks by incorporating an elastomer suspension system.

[0003] The suspension system utilizes two constant rate compression elastomer shock absorbers, which are bilateral and equidistant between the hanger and base plate of the skateboard truck. These constant rate compression elastomer shock absorbers significantly suppress and eliminate shock forces associated with all styles of skateboarding. This permits more direct movement of the skateboard truck to dramatically enhance guiding stability and therefore guiding control. This design allows customization of truck response with easily interchangeable shock absorbers. Further, the shock absorber design can be produced with a molded or cast process, thus improving the manufacturability of the assembly.

#### **BRIEF DESCRIPTION OF DRAWINGS**

[0004] *Fig. 1* is a rear perspective view of the Elastomer Suspension System skateboard truck showing our new design and structure thereof; *Fig. 2* is a front perspective view of the Elastomer Suspension System skateboard truck, showing our new design and structure thereof; *Fig. 3* is a rear view of the skateboard truck. This view depicts both con-

stant rate compression elastomer shock absorbers and their attachment to the truck hanger and base, as well as, the pivot assembly utilizing constant rate compression elastomer bushings around the pivot pin thereof;*Fig. 4* is a right side view showing the constant rate compression elastomer shock absorber mounted between the truck hanger and truck base. This view further represents the pivot assembly utilizing constant rate compression elastomer bushings around the pivot pin thereof;*Fig. 5* is a left side view showing the constant rate compression elastomer shock absorber mounted between the truck hanger and the truck base This view further represents the pivot assembly utilizing constant rate compression elastomer bushings around the pivot pin thereof;*Fig. 6* is a front view of the skateboard truck delineating the connection of the constant rate compression elastomer shock absorbers between the skateboard truck hanger and the base plate thereof;*Fig. 7* is a top view of the skateboard truck thereof; *Fig. 8* is a rear view of the skateboard truck base plate outlining the orientation of the constant rate compression elastomer shock absorbers conically shaped mounting studs thereof;*Fig. 9* is a rear view of the skateboard truck hanger, which portrays the constant rate compression

elastomer shock absorbers mounting studs and the hanger stabilizer thereof;*Fig. 10* is a cross sectional view of the left side of the skateboard truck renders both constant rate compression elastomer bushings secured by the pivot pin and hex nut, forming the pivot assembly between the skateboard truck hanger and base plate thereof;*Fig. 11* is a perspective view of the constant rate compression shock absorber thereof;*Fig. 12* is a cross sectional view of the constant rate compression elastomer shock absorber showing both conically shaped shock absorber mounting orifices.

#### **DETAILED DESCRIPTION**

[0005] The following is the detailed fabrication narrative of the Elastomer Suspension System Skateboard Truck. The truck is for attachment and use on all standard skateboard decks. This skateboard truck differs by all previous designs of skateboard trucks, by incorporating an easily interchangeable elastomer suspension system. This elastomer suspension system substantially reduces or eliminates the extreme impact shock forces related to all types of skateboarding. In addition, the elastomer suspension system provides enhanced control and maneuverability of the skateboard. Elastomer shock absorbers of various

hardness, or density, can easily be interchanged to provide optimization of truck response according to a rider's weight and ability.

[0006] The skateboard truck hanger shall be cast from aluminum or other suitable metallurgical alloy. The hanger includes the fundamental body (2), which has raised conically shaped absorber mounting studs (4)(6) that are central to the circular recessed elastomer shock absorber retention cutouts (8)(14), which are bilateral and equidistant from one another. Non-slipping axle with extended axle terminal end studs (16)(18), pivoting stabilizer (20) extending perpendicular from the horizontal axis of the dorsal surface of the fundamental body (2). A semicircular through-holed aperture yolk (22), extending radial and perpendicular to the horizontal axis of the posterior surface of the fundamental body (2), for means of mounting both ventral and dorsal shock absorbing bushings (74)(78), providing a pivot joint for the hanger assembly and securing the hanger to the base plate (70).

[0007] The skateboard truck axle (24) shall be machined from various metallurgical alloys and orientated central to the horizontal axis of the fundamental body (2) of the hanger. The axle terminal end studs (16)(18) shall be die threaded

to accommodate skateboard wheels and secured by means of hexagonal jam lug nuts (26)(28).

[0008] The skateboard truck base plate (70) shall consist of a raised cast through-holed attachment socket (30) where the pivot fastener (32) is inserted through for means of attaching and securing the hanger to the base plate. Cutouts will be cast into the base plate directly under the elevated elastomer shock absorber mounting platforms (34)(36) to reduce excess mass to the base plate. Bilateral and equidistant on each elevated elastomer shock absorber mounting platform, shall be one each of a raised conically shaped elastomer shock absorber mounting studs (38)(40). Through-holes shall be machined drilled in each corner of the base plate, with one in each corner of the posterior end of the base plate (42)(44) and two in each corner of the anterior end of the base plate (46)(48)(50)(52) to facilitate attachment of the base plate and truck assembly to a skateboard deck. In the center posterior portion of the base plate is a recessed interlocking socket (54), inserted with a constant rate compression elastomer cup (56), providing a pivot joint on which the pivoting stabilizer of the hanger will rotate.

[0009] The skateboard truck will employ two elastomer shock

absorbers (58)(60) and will be fabricated from various densities of elastomers to facilitate customization of the suspension system. The elastomer shock absorbers are cylindrical along their vertical axis and being spherically formed at the midpoint. They are opened at either end with conically fashioned mounting orifices (62)(64), which makes possible the mounting and securing the elastomer shock absorbers to the raised conically shaped elastomer shock absorber mounting studs (4)(6)(38)(40) of both the skateboard truck hanger and the base plate.

[0010] The pivot fastener (32) shall be a button head cap screw of standard size and produced from suitable metallurgical materials. One end of the pivot pin will be die threaded to secure the skateboard truck assembly (68) to the skateboard truck base plate (70) by means of a hexagonal jam nut (76). The pivot fastener (32) is inserted all the way through the lower constant rate compression elastomer bushing retention washer (72), ventral elastomer shock absorbing bushing (74), semicircular through-holed aperture yolk (22), dorsal elastomer shock absorbing bushing (78) upper constant rate compression elastomer bushing retention washer (80), and finally through the raised cast through-holed attachment socket (30) where the die

threaded end will be secured by the hexagonal jam nut (76) flush with the anterior surface of the base plate (70).

[0011] The Elastomer Suspension System Skateboard Truck is now fully assembled (10) and ready to be mounted to a skateboard deck.